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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,740	04/09/2004	David Mills	DKT 03050A (BWI-00086)	1865

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EXAMINER
DEVORE, PETER T

ART UNIT	PAPER NUMBER
3751	

BorgWarner Inc.
Patent Administrator
3850 Hamlin Road
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DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/821,740	MILLS ET AL.	
	Examiner	Art Unit	
	Peter deVore	3751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites that the fluid control body has "a pressure supply passage at a first end" and "a radially extending pressure control passage". However, the disclosed "supply passage" 18 appears to extend radially via part 28 and the disclosed "control passage" 20 appears at one end (see Fig. 7), opposite from how claimed. It is unclear how the claim is intended to read on the specification, the claim is thus indefinite.

Claim 10 recites that the fluid control body has "a pressure supply passage at a first end" and "a radially extending pressure control passage". However, the disclosed "supply passage" 18 appears to extend radially via part 28 and the disclosed "control passage" 20 appears at one end (see Fig. 7), opposite from how claimed. It is unclear how the claim is intended to read on the specification, the claim is thus indefinite.

Claim 16 recites that the fluid control body has "a pressure supply passage at a first end" and "a radially extending pressure control passage". However, the disclosed "supply passage" 18 appears to extend radially via part 28 and the disclosed "control

passage" 20 appears at one end (see Fig. 7), opposite from how claimed. It is unclear how the claim is intended to read on the specification, the claim is thus indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greiner.

The Greiner reference discloses a solenoid valve comprising a fluid control body 16 capable of being received in a fluid housing (the solenoid is a fuel injector for an engine) and having a "pressure supply passage" 20 at a first end and a radially extending "pressure control passage" 50, a " feed supply tube" 40 in a cavity of the control body with an outer diameter in communication with the pressure control passage (see Fig. 1) and an inner bore operably connected to the pressure supply passage (the inner bore and the pressure supply passage both receive the valve seat portion 17, see Fig. 1), the feed supply tube supported by a flying buttress structure (see Fig. 2) and having a valve receiving chamber area (area which supports valve seat portion 17, see Fig. 1), a valve seat portion 17 press fit into the control body (see Fig. 1) and having a valve seat 23 and a passage 22, a valve (26, 28, 29), and a solenoid (coils 13 and 14), but does not disclose that the valve seat portion is made of plastic. However, it would

have been obvious to make the valve seat portion from plastic, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. Regarding claim 9, the valve includes ball 28.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greiner in view of Erickson.

The Greiner valve further includes a casing member 1 and the solenoid further has a central axis and includes coils 13 and 14 wound on C-shaped integral bobbins/retention rings (see Fig. 1), but the Greiner reference is silent as to whether the bobbins are molded and neither coil has radially stepped inner diameters receiving a portion/flux tube of the casing member. However, the Erickson reference discloses a similar valve whose bobbin is molded (see col. 3, lines 11-12) for cost effective manufacturing of the bobbin. It would have been obvious to employ a molded bobbin in the modified Greiner valve in view of Erickson for cost effective manufacturing of the bobbin. Furthermore, the coil of the Erickson valve has a radially stepped inner surface so that the bobbin may accommodate a portion/flux tube 64 of the casing member for improved precision in the location of the bobbin within the valve housing (see Fig. 3). It would have been obvious to employ radially stepped inner diameters on at least one of the coils and the associated bobbins accommodating a portion/flux tube of the casing member in the modified Greiner valve in view of Erickson for improved precision in the location of the bobbin within the valve housing.

Claims 16-18, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over McAuliffe in view of Erickson.

Regarding claim 16, the McAuliffe reference discloses a solenoid valve (Fig. 3) comprising a fluid control body 140 capable of being received in a fluid housing and having a "pressure supply passage" 192 at a first end and a radially extending "pressure control passage" 50, a " feed supply tube" 170 in a cavity of the control body with an outer diameter in communication with the pressure control passage (see Fig. 3) and an inner bore operably connected to the pressure supply passage (see Fig. 3), the feed supply tube having a valve receiving chamber area (area which receives ball 182), a valve seat portion 184 press fit into the control body (see Fig. 3) and having a valve seat portion (portion which ball 182 abuts against and a passage (see Fig. 3), a valve 182, a solenoid having a central axis (see Fig. 1), a coil 146, a bobbin 148, a casing member 44, a pole piece 158, and an armature 166, but does not disclose that the valve seat portion is made of plastic or that the coil has radially stepped inner diameters or that the casing member has a flux tube/support portion. However, it would have been obvious to make the valve seat portion from plastic, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. Furthermore, the Erickson reference discloses a similar valve whose coil has a radially stepped inner surface so that the bobbin may accommodate a portion/flux tube 64 of the casing member for improved precision in the location of the bobbin within the valve housing (see Fig. 3). It would have been obvious to employ radially stepped inner

diameters on at least one of the coils and the associated bobbins accommodating a portion/flux tube of the casing member in the McAuliffe valve in view of Erickson for improved precision in the location of the bobbin within the valve housing. Regarding claim 17, the groove between armature portions 174 and 186 can be considered a "pressure relief vent" because it allows the pressure in that area to be the same as the pressure in port 198 when portion 186 is not seated (see Fig. 3) Regarding claim 18, the armature 166 is a rod that would be within the support of the modified casing. Regarding claim 20, the pole piece 158 of McAuliffe has a "wing member" (the radial flange, see Fig. 3), but McAuliffe remains silent as to the tolerance of the distance between the valve seat and the wing member. However, it would have been obvious to maintain a tolerance of 0.025 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involved only routine skill in the art. In re Aller, 105 USPQ 233. Regarding claim 21, the valve is ball 182.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Guglielmi, Fujimoto, and Ahn references disclose similar solenoid valves.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter deVore whose telephone number is 571 272-4884. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 571 272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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